

ABSTRACT OF THE DISCLOSURE

A test for determining the presence of multi-valent metal contaminants, such as arsenic, mercury and chromium, when present in certain valence states and a system for removal of these contaminants from water. Multi-valent metal salts, for example,  $\text{Cr}^{+6}$ , which are highly toxic, can be detected and potentially removed from water through a redox reaction by reaction with iron or cobalt salts to obtain a reductive elimination of the  $\text{Cr}^{+6}$  by conversion to  $\text{Cr}^{+3}$ . The determination may be in the form of a test, such that a tableted composition can be introduced into water for reduction of a metal salt, such as  $\text{Cr}^{+6}$  to  $\text{Cr}^{+3}$  in order to provide a visual indication thereof. The system for the conversion of  $\text{Cr}^{+6}$  or other reducible metal salts to other lower valence states having less toxicity would rely upon introduction of a metal salt in the form of a reducing agent which would be introduced into the water allowing for a reduction/oxidation action to take place. This would be followed by removal of the flocculated/precipitated reduced contaminant metal salt and by re-reduction of the oxidized reducing agent.